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Subject: Request for Synopsis Uploading on *Shodhgangotri* and Plagiarism Check

Respected Sir/Ma'am,

I am hereby submitting my synopsis of PhD in Clinical psychology titled "Applicability of a Brief Neurocognitive Intervention for Adolescents with Internet Gaming Disorder: The IGNITE-A-TRIAL" for plagiarism check and uploading on *Shodhgangotri.*

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Thanking you

Yours Sincerely

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PROTOCOL FOR THESIS

DOCTOR OF PHILOSOPHY (Ph.D.) IN CLINICAL PSYCHOLOGY
SUBMITTED TO RANCHI UNIVERSITY, RANCHI

APPLICABILITY OF A BRIEF NEUROCOGNITIVE INTERVENTION FOR ADOLESCENTS WITH INTERNET GAMING DISORDER: THE IGNITE-A TRIAL

BY –

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UNDER THE JOINT GUIDANCE OF

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I KRITI KANWAR son/daughter/wife/of BHAVAN SINGH RAJAWAT resident of JAIPUR, RAJASTHAN a candidate admitted to the PhD. Programme of the institute for the session 2023-25 hereby undertake that

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Name: KRITI KANWAR

Date: 28/5/24

STATE OF ART

According to Petry & O'Brien[1] Internet gaming disorder (IGD) is a new behavioural addiction among teenagers and young adults that has drawn the attention in the last few years. The overuse of the Internet for online gaming constitutes an addictive behaviour that significantly impacts adolescent students, making it challenging for them to cease engagement with virtual games.

The internet opens up a world of possibilities, connecting people from all corners of the globe and providing a wealth of information and entertainment. But, like anything, moderation is key, too much time online, especially in the realms of excessive gaming or internet use, can have negative consequences on our offline lives[2.] This type of addiction was termed as "Internet Gaming Disorder" (IGD) by the Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM 5) (American Psychiatric Association, 2013)[3] and described in the 11th Revision of the International Classification of Diseases (ICD-11) (World Health Organization, 2018 [4] as a "pattern of gaming behaviour (digital-gaming or video-gaming) characterized by impaired control over gaming, increasing priority given to gaming over other activities to the extent that gaming takes precedence over other interests and daily activities, and continuation or escalation of gaming despite the occurrence of negative consequences in a period of 12 months". It is characterised by compulsive online single- and multiplayer game playing that is difficult to control exerts a significant detrimental effect on daily functioning.[5].

DSM 5 (American Psychiatric Association, 2013)[3] described the IGD as persistent and recurrent use of Internet to engage in games alone or with other players which leads to clinical impairment or distress. IGD is considered clinically significant if there will be the presence of five or more symptoms in a 12-month period. The nine (9) IGD symptoms can be: 1) preoccupation with Internet Games; 2) withdrawal symptoms like irritability, anxiety and sadness; 3) tolerance or the

need to increase time in gaming; 4) unsuccessful attempt to stop gaming; 5) loss of interest in other activities; 6) psychosocial problems due to excessive gaming; 7) deceived family members, therapist or others on the amount of time in gaming; 8) use of Internet gaming to escape or relieve negative mood; and 9) jeopardized or lost significant relationship, educational, job or career opportunities because of online gaming. Individuals who engaged in online gaming for over 30 hours per week were classified as exhibiting maladaptive behaviour associated with Internet Gaming Disorder (IGD).

The intensity of Internet Gaming Disorder can be categorised as mild, moderate, or severe.

Individuals classified as having a severe level of Internet Gaming Disorder (IGD) are often those who experience significant difficulties in their personal relationships, academic performance, or career development due to the extended time they spend engaged in virtual gaming.

Gaming behaviour may manifest in a continuous or episodic and recurrent pattern, leading to substantial distress or notable impairment across various domains of functioning, including personal, family, social, educational, occupational, and other critical areas of life. Through a systematic review and meta-analysis, by Stevens et al. in 2020, IGD prevalence worldwide was determined to be 1.96%[7]. According to recent Indian study by Singh et al., 2019, the prevalence is 3.6% among medical students and 0.3%–0.7% among adolescents[8] . Research has looked at the strong correlations between IGD and psychological issues (impulsivity, depression, and ADHD); the moderate correlations between IGD and interpersonal issues (loneliness, lack of social skills); and the correlation between IGD and psychological wellbeing. Findings from the systematic review indicate that online games are often used by players as a coping mechanism for anxiety and depressive symptoms. Additionally, these games have been associated with the presence of ADHD, suicidality, self-harm, and aggressive behaviors.[9-10]

Griffiths in 2010[11] in his study noted that the prevalence of adolescent's online gaming and gambling behaviours is rising. Adolescence is a period of life that presents a significant risk for addiction. Increased freedom and time away from parental oversight, compared to their time in school, makes young individuals more vulnerable to the influence of peer pressure. Age-related increases in social behaviour, risk-taking, and novelty seeking have been noted by Spear (2000)[12]. Rotunda et al. (2003) found that adolescents experiencing significant difficulties with peers, parents, or school often turn to the internet or online gaming as a means of escaping from reality.[13] Additionally, Sharma, Gandhi, John, Thakur, Anand, Sahu et al., in their study in 2020, also found that the Emotional instability, social influence, unhealthy coping mechanisms, interpersonal difficulties, and inconsistent reward expectations can prompt adolescents to shift from gaming to gambling.[14] The main factors influencing the severity of Internet addiction (IA) and IGD are anxiety and depressive spectrum disorders[15-17].

These trends may be related to the adolescent brain's relatively low impulse control, which makes it more susceptible to rewards and socioemotionally charged messages. According to Crews et al. 2007[18], adolescence is a crucial time for cortical development that shapes characteristics that adults have for the rest of their lives. The development of the frontal cortex in late adolescence aids in the improvement of goal- or priority-setting and reasoning skills. During this time, impulse control and the capacity to weigh immediate versus long-term rewards also develop. Behavioural addictions that develop early would interfere with this crucial developmental process.

Addictive disorders are defined by excessive and frequently uncontrolled use of substances or participation in gambling and gaming, despite clear adverse effects on health, productivity, and social relationships (American Psychiatric Association, 2013)[3]. This behaviour indicates a fundamental impairment in decision-making abilities. The constant engagement with rewarding

stimuli in games, such as achievements or level advancements, can lead to desensitization and reduced sensitivity to natural rewards. The reliance on immediate rewards is associated with the sensitization of the "reward system" (specifically, the dopaminergic mesolimbic system), which favours stimuli that provide rapid and intense reward outcomes, as noted by Robinson and Berridge (2008)[19.] The diminished consideration of future consequences is associated with impulsivity, characterized by acting without forethought, or a diminished cognitive and emotional understanding of the value of future states. These deficits are related to abnormalities in the "cognitive control system" (comprising the dorsolateral prefrontal cortex, anterior cingulate, and their connections with the striatum) as well as the "emotional system" (which includes the ventromedial prefrontal cortex, amygdala, and insula).[20-21]. This blunted reward response may contribute to impulsivity and a preference for immediate rewards over delayed gratification. Furthermore, extended gaming sessions can interfere with regular sleep patterns, resulting in fatigue and cognitive deficits. Sleep deprivation can affect attention, memory, and decision-making processes, exacerbating neuropsychological deficits.

Neuropsychological research on Internet Gaming Disorder (IGD) has primarily concentrated on the frontostriatal and frontolimbic pathways, especially those involved in the reward circuitry. [22-23] Deficiencies in executive functions, such as delay discounting, decision-making, impulse control, information processing and attentional bias have been associated with the frontolimbic system, with a particular emphasis on the prefrontal cortex.[24-26] The immersive nature of video games, especially those involving intense graphics and rapid stimuli, can overstimulate the brain's reward and arousal systems. This overstimulation may lead to alterations in neural pathways, impacting executive functions like impulse control and decision-making. Moreover, social isolation, often associated with excessive gaming, can contribute to neuropsychological deficits. A deficiency in

real-world social interactions may impede the development of the ability to regulate emotions and manage social skills effectively.

There has been a notable increase in research on Internet Gaming Disorder (IGD) over the past few years. Shek and Yu (2016) noted that while psychological factors and psychotherapeutic interventions related to internet addiction, especially gaming addiction, have been studied, there is a significant lack of research literature on this topic in India.[27] Still, relatively few studies have looked at the effectiveness of pharmacological therapies and psychotherapy intervention programmes for IGD.[28] The reviews by Griffiths, Kuss and Pontes in 2016 and Stevens et al., in 2019 indicate that cognitive behaviour therapy (CBT) is beneficial for treating depression and IGD symptoms during the post-intervention phase. [29-30] Most studies have shown that psychological issues including depression, anxiety, loneliness, impulsivity, and attention are the main concerns of people with IGD.[31]

REVIEW OF LITERATURE

In the research by Amudhan et al., 2022, it was found that Smartphone Addiction (SMA) and General Technology Addiction have the prevalence of 10.69% with Smartphone addiction being the most prevalent, followed by gaming addiction, with both serving as significant risk factors.[32] Adolescent technology addiction has been linked to a range of risk factors at the individual, family, and school levels. Among engineering students, 27.1% exhibit mild internet addiction, with predictors including male gender, residing in rented accommodations, frequent internet use, spending over three hours online daily, and experiencing psychological distress. Additionally, more than half of adolescents are moderately addicted to the internet and smartphones. Moderate deficits in life skills have been associated with this level of addiction. Ramakrishna et al., in their study in 2023, three-fourths of adolescents experience mild to moderate depression, anxiety, and executive

dysfunction symptoms and are positively associated with smartphone addiction.[33] Internet Gaming Disorder (IGD) is associated with elevated levels of depression, anxiety, and stress, decreased life satisfaction, and increased motor and attentional impulsivity. [34.] Lim et al.[35] confirmed that individuals with Internet Gaming Disorder (IGD) exhibit greater levels of distress, higher degrees of impulsivity, anger or aggression, depression, and anxiety, as well as impaired response inhibition and a lower quality of life.

Adolescents engage in virtual gaming as a way to escape negative emotions, with this cycle of escapism often evolving into obsessive passion.[36] Those with Internet Gaming Disorder (IGD) display decision-making deficits and tend to seek immediate gratification or rewards. Self-control and social exclusion have been identified as the most significant predictors of Internet Gaming Disorder (IGD), alongside factors such as impulsivity, self-esteem, mastery, control over one's external environment, and parent-child attachment. Issues with impulse control and unmet needs may increase adolescents' vulnerability to developing IGD.[39] Individuals with Internet Gaming Disorder have demonstrated notable cognitive impairments in attention and focus, accompanied by a decline in executive functioning.[40]

In the study by Tadpatrikar & Sharma,[41] the neuropsychological deficits were found in right parietal, temporal, and frontal cognitive functions. In the adolescents, smartphone addiction has been found to be associated with differences in working memory, impulsivity, and social desirability and also hindering the enriched psychological experiences.[42] Stress and depression are the major factors in internet addiction with executive dysfunction found to be mediating the pathway between anxiety and smartphone addiction. The neuropsychological deficits associated with IGD severity mediate the link with psychosocial outcomes. [43] Orbitio frontal deficits are associated with poor self-regulation mechanisms and response inhibition.[44] According to S. B. Hong et al. (2015) deficiencies are also identified in the frontostriatal pathways, particularly in the

areas of psychomotor control[45]. Research reveals shortcomings in impulse control and executive functioning,[46-49] and cognitive retraining strategies have been shown to substantially reduce these deficits as well as excessive gaming behaviours.

Continued engagement in cyber gaming activities has resulted in adverse health effects for players. Rehbein et al.[50] found that students with Internet Gaming Disorder (IGD) frequently reported sleep deprivation and other sleep-related issues; they often spent so much time gaming that they neglected to eat [51], leading to diminished auditory and visual functioning52. They cannot control their behaviour because according to Kuss and Lopez[53] gaming fanatics have poorer emotion regulation and reduced response-inhibition because their cognitive control and working memory had decreased its capacity. Kiraly et al.[54] observed that individuals who spend excessive hours playing online games often lose interest in healthy activities and neglect their responsibilities to family and academics, frequently leading to conflicts with family members and friends. This behaviour contributes to poor academic performance, social withdrawal, and dissatisfaction with overall well-being[55]. Fernandes and Sadhana[56] validated the effectiveness of Cognitive Behavioral Therapy (CBT) in treating a range of behavioural and emotional problems, a finding that has been endorsed by numerous therapists. . CBT has been shown to be effective in treating individuals experiencing psychological distress due to virtual gaming addiction [(53, 57-58).] The therapy works by offering corrective strategies for cognitive processing, helping individuals identify and replace irrational thoughts with more rational ones. Adolescents struggling with excessive virtual gaming require supportive interventions. Pearcy et al. [59] emphasized the relevance and timeliness of studies and interventions focused on virtual gaming. Woog [60] recommended a treatment approach centered on behavioural management, involving a gradual reduction in time spent on virtual gaming. The overall pooled treatment effect size for various interventions targeting gaming disorder was estimated at 0.63 (95% CI [0.43, 0.83], $p < .001$).

NEED OF THE STUDY

Adolescents represent a demographic that readily and naturally embraces technology, often without the hesitation or apprehension observed in older age groups. However, increased involvement in internet use and gaming is often accompanied by psychosocial issues linked to excessive use. Individuals addicted to screens or excessive gaming frequently exhibit reduced psychosocial well-being, heightened psychiatric symptoms, and lower life satisfaction. This addiction also correlates with increased feelings of loneliness, diminished academic performance, decreased participation in sports and physical activity, and poorer health and sleep quality. Impairments in executive functions, attention, memory, social cognition, and decision-making abilities limit the everyday functioning of adolescents with behavioral addictions.

The escalating incidence of Internet Gaming Disorder in adolescents has sparked significant concern. The primary goal is to mitigate the frequency, intensity, duration, and symptoms linked to their online gaming activities. While CBT is the most evidence-based intervention for Internet Gaming Disorder (IGD), it addresses only a limited number of factors or pathways contributing to its development. The primary focus of CBT is on correcting cognitive distortions, contingency management, and assigning homework tasks [61, 7.] However, the long-term effectiveness of CBT in reducing time spent on internet gaming remains unclear[7.] These factors highlight the necessity for developing intervention programs that adopt an integrative approach to address Internet Gaming Disorder (IGD) and the related neuropsychological deficits. There is lack of therapeutic approaches that have specifically focused on the executive functioning mechanisms from neuropsychological point of view. In the context of clinical treatment, it is essential to evaluate individuals' cognitive functions, including attentional biases, implicit and explicit cognitions, executive functions, and

inhibitory control abilities. Drawing inspiration from the neuropsychology principles (brain-behavior relations) there is a need to target the underlying cognitive and neural mechanisms of gaming addiction. Neurocognitive interventions combined with behavior modification can help alleviate the severity of internet and gaming addiction by pursuing three primary goals: decreasing usage hours, enhancing functioning in critical areas of life, and minimizing exposure to problematic content and online activities. These interventions aim to improve executive functions, address cognitive biases, and promote neuroplasticity in the brain targeting cognitive functions such as executive functions, attentional biases, and decision-making aiming to addressing neural changes associated with gaming addiction. Cognitive training exercises will enhance executive functions, planning and organization skills, cognitive flexibility while Behavior modification therapy techniques can aid in decreasing the frequency, intensity, and duration of online gaming, enabling patients to develop a schedule filled with non-internet-related activities that help curb pathological usage. Behavior modification along with cognitive training would be complementary approaches in addressing gaming addiction, targeting both the behavioral patterns and underlying cognitive processes.

PROBLEM TO BE INVESTIGATED

To evaluate the application of a brief neurocognitive intervention targeting the deficits in the five domains of executive functions namely attention, planning, mental flexibility, working memory and response inhibition with motivational interviewing and behaviour modification techniques in adolescents with internet gaming disorder by comparing them under experimental group (group receiving the intervention) and control group (group receiving treatment as usual).

AIM OF THE STUDY

The aim of this study is to assess the applicability of a brief neurocognitive intervention targeting the deficits in the five domains of executive functions namely attention, planning, mental flexibility, working memory and response inhibition along with severity of addiction and the quality of life in the adolescents with internet gaming disorder.

OBJECTIVES OF THE INVESTIGATION AND MOTIVATION

OBJECTIVES:

1. To examine the applicability of brief neurocognitive intervention on executive functions in adolescents with internet gaming disorder as compared to treatment as usual group at the end of 7 weeks.
2. To examine the applicability of brief neurocognitive intervention on the gaming severity and the quality of life in adolescents with internet gaming disorder as compared to control group at the end of 7 weeks.
3. To examine the association of executive functions, gaming severity and quality of life with the clinical and socio-demographic characteristics within the adolescents receiving brief neurocognitive intervention at the end of 7 weeks.

MOTIVATION

The escalating incidence of Internet Gaming Disorder in adolescents has sparked significant concern. Adolescents represent a demographic that typically embraces technology more readily and instinctively, exhibiting less fear and hesitation compared to older age groups. However, increased

engagement in internet use and gaming often leads to deficits in executive functioning, as well as psychosocial issues related to excessive usage. Individuals who are addicted to screens or engage in excessive gaming frequently report lower levels of psychosocial well-being, heightened psychiatric symptoms, and reduced life satisfaction. This impact is further reflected in increased feelings of loneliness and impaired academic performance, reduced engagement in sports and exercise, and poorer health and sleep levels. Deficits in executive functions, attention, memory, social processing, and decision-making abilities also impede the daily functioning of adolescents with behavioral addictions.

This neuropsychological intervention for Internet Gaming Disorder (IGD) can be beneficial in understanding the cognitive and emotional factors contributing to the disorder, identifying specific cognitive deficits, such as impulse control issues or attentional problems, that may be driving excessive gaming behaviour, it can also help the adolescents to develop healthier coping mechanisms and enhance executive functions like decision-making and problem-solving. This holistic approach not only addresses the symptoms but also targets the root causes of Internet Gaming Disorder.

The intervention will target cognitive functions with the goal of addressing neural changes linked to gaming addiction and also seeking to enhance neuroplasticity in the brain and address cognitive biases. Behaviour modification therapy techniques can assist patients in decreasing the frequency, intensity, and duration of their online gaming activities, cognitive training exercises will improve executive functions, planning and organisation skills, and cognitive flexibility. Moreover, the patient will be able to develop a schedule filled with non-internet-related activities that will contribute to reducing pathological usage. In order to treat gaming addiction, behaviour modification and cognitive training would be complementary strategies that target the underlying cognitive processes as well as behavioural patterns.

RESEARCH HYPOTHESES

1. There will be no significant difference in the executive functioning domains of attention, planning, mental flexibility, working memory and response inhibition of the adolescents with internet gaming disorder in the experimental group as compared to the control group.
2. There will be no significant difference in the severity of gaming addiction and the quality of life in adolescents with internet gaming disorder in experimental group as compared to the control group.
3. To examine the association of executive functions, gaming severity and quality of life with the clinical and socio-demographic characteristics within the children receiving brief neurocognitive intervention.

RESEARCH DESIGN AND METHODOLOGY

Scope of the study:

The study will be conducted at the behavioural addiction clinic, Centre for Addiction Psychiatry and Erna Hoch Centre for Child and Adolescents Psychiatry of Central Institute of Psychiatry, Ranchi.

Design of the study

The present study will be a hospital based, randomised clinical trial with treatment as usual group conducted in Central Institute of Psychiatry, Ranchi. Study will be done on adolescents with Internet Gaming Disorder using pre-test and post-test control group design.

SOURCES OF DATA & TOOLS TO BE USED IN COLLECTION OF DATA

STUDY VENUE: The study will be conducted at the behavioural addiction clinic, Centre for Addiction Psychiatry and Erna Hoch Centre for Child and Adolescents Psychiatry of Central Institute of Psychiatry, Ranchi.

SAMPLING TECHNIQUE*:* Purposive selection with computer based randomisation sequence. Allocation concealment would be done with the help of sealed envelopes.

SAMPLE: The sample will consist of 60 adolescents (both male and female) divided into 2 groups (study group= 30 and treatment as usual=30).

Inclusion criteria:

- Adolescents having problematic online gaming behaviours as their main complaint who endorse at least five out of the nine criteria of IGD in DSM-5.
- Adolescents of either gender aged 13 to less than 1 9years.
- Adolescents giving written assent to be part of the study.
- Caregivers giving written informed consent for their adolescent to be a part of the study.
- Right handed adolescents, who can speak, read and write in English.

Exclusion criteria:

- Adolescents having dependence of substances like alcohol, cannabinoids, solvents, opioids, stimulants, cocaine, sedatives, hypnotics and hallucinogens except nicotine and caffeine.
- Adolescents diagnosed with genetic syndromes and neurodevelopmental disorders known to have executive function deficits (Fragile-X syndrome, Williams syndrome, intellectual disability, ADHD, Communication disorder, Autism spectrum disorder, Specific Learning

Disorder, Motor disorder, etc.), conduct disorder, neurological illness, traumatic brain injury, or any physical disability that interferes with the participation in the study.

- Adolescents having a past or current history of psychosis.

TOOLS TO BE USED IN COLLECTION OF DATA

The psychological tools will be administered with the adolescents with internet gaming disorder. Screening and baseline assessments will be followed by intervention and post assessment.

1. Informed Assent and Consent form
2. Socio Demographic and Clinical Information Data Sheet

Screening Tools:

3. ESSENCE-Q
4. CRAFFT
5. Handedness Preference Schedule (HPS)

Study Tools:

6. Internet Addiction Test (IAT)
7. Internet Gaming Disorder-20 (IGD-20)
8. Cambridge Neuropsychological Test Automated Batteries (CANTAB)
9. Digit-symbol substitution test (DSST)
10. Revised Child Anxiety and Depression Scale (RCADS) – Parent Version
11. World Health Organization- Quality of Life – Brief Version (WHOQOL-BREF)

1. **Informed Consent/Assent form and Participant Information Sheet**: Permission would be taken from the participants and their parents/caregiver before conducting the study. The informed consent will provide information about the research purpose, procedure, duration, participant selection, voluntary participation and confidentiality of the study along with Certificate of Consent.
2. **Socio- Demographic Data Sheet**: It will be prepared by the investigator for collecting sociodemographic data and information on gaming use variables like age, gender, school stage, ethnicity, family structure, weekly gameplay (duration, frequency, time spent gaming) device preference, game genre preference, existence of offline friendships and impact of gaming on biological functions and academic performance. **Clinical Information Sheet:** It includes description of the clinical variables like presenting complaints, history of presenting illness, family history of any illness or substance, past history of medical illness, past medical history, early childhood, developmental and scholastic history, and pre-morbid temperament. Information related duration of illness, causes, other area involved in gaming addiction.
3. **ESSENCE-Questionnaire (ESSENCE-Q)**: It is a screening tool designed to help clinicians and researchers to identify children with ESSENCE (or neurodevelopmental) problems. It is a brief (12-item) screening questionnaire which can be used as a short interview or as a questionnaire filled out by parents for all age groups. It was found to have good psychometric properties, with a sensitivity of 0.94 and specificity of 0.53.
4. **CRAFFT :** It is a 6 item substance use screening tool for adolescents aged 12-21 containing 3 pre-screening questions inquiring about past year use of alcohol, cannabis, or other drugs and asks 6 yes/no questions about risk indicators or problems they may have experienced from alcohol or drug use (C= ridden in a CAR driven by someone intoxicated; R= use alcohol/drugs to RELAX; A= use alcohol/drugs while ALONE; F= FORGET things you did while

intoxicated; F= FAMILY or friends tell you to reduce drinking/drug use; T= gotten into TROUBLE while using alcohol/drugs). A score of 2 or higher was found to be optimal in identifying any substance-related problem (including alcohol or drugs; sensitivity=0.76; specificity=0.94), any Diagnostic and Statistical Manual, Fourth Edition (DSM-IV)[8] substance use disorder (either abuse or dependence; sensitivity=0.80; specificity=0.86).

5. **Handedness Preference Schedule (HPS):** Mandal et al. (1992) developed this test to assess an individual's hand preference (handedness) by determining their preferred hand for various daily activities. The scale consists of 15 items, requiring participants to indicate their hand preference for each activity using a 5-point scale.
6. **Internet Addiction Test (IAT)** (Young, 1998): It is a self-report measure containing 20 questions based on a 5-point Likert scale to assess the Internet Addiction (IA) and its severity. The scores for the individual items were summed up for obtaining a total scale which ranges from 20 to 100. The summated score of the scale is interpreted with the normative criteria offered by the scale which suggests the severity categorization as mild, moderate or severe IA. The higher score represents the higher level of severity of the Internet compulsivity and addiction. The total score that ranges from 0 to 30 is considered to reflect a normal level of Internet usage, total scores between 31 and 49 show the presence of a mild level addiction, 50 to 79 represent the presence of a moderate level, and sores of 80 to 100 indicate a severe dependence upon the Internet. IAT shows good to moderate internal consistency (alpha coefficients – 0.54 -0.82). IAT has been evaluated for its content and convergent validity, internal consistency [ά = 0.88] and test-retest reliability [r = 0.82]. All these psychometric properties of IAT were found to be adequate. (Alavi, 2010; Widyanto & McMurran, 2004).
7. **Internet Gaming Disorder-20 (IGD-20)** (Pontes & Griffiths, 2014): It is a 20 item likert type self-report scale which is designed to evaluate six components of addictive behaviours as

outlined in DSM-5 criteria of IGD including namely tolerance, salience, mood modification, withdrawal, conflict and relapse (Pontes and Griffiths, 2014). Each of these components comprise of 3 to 5 questions and each question is rated from 1 = strongly agree to 5 = strongly disagree. The Test cut-off score is 71 points. IGD-20 has an overall strong internal consistency and with each component subscale also having adequate internal consistency inclusive of salience, mood modification, tolerance, withdrawal symptoms, conflict and relapse.

a) **Cambridge Neuropsychological Test Automated Batteries (CANTAB)** (Robbins and Sahakian, 1994, Capuron et al, 2001): The CANTAB has been utilized to evaluate neurocognitive performance (Robbins & Sahakian, 1954; Capuron et al., 2001). It includes modules for various neurocognitive functions and processes, such as psychomotor and motor speed, reasoning and planning abilities, memory and attention, as well as dysfunctions related to the frontal, temporal, and hippocampal regions. Consequently, it facilitates the assessment of neurocognitive deficits associated with neurological disorders, pharmacological interventions, and neurocognitive syndromes. The following test panel will be administered to evaluate executive functioning across five domains: attention, planning, mental flexibility, working memory, and response inhibition.

b) **Stockings of Cambridge (SOC):** The SOC task, derived from the traditional Tower of London, is employed to assess **planning abilities** (Owen et al., 1990). This task involves rearranging balls in the lower display a specified number of times (ranging from two to five moves) to match the pattern presented in the upper display. The key variable of interest is the number of problems successfully solved using the minimum number of moves, which indicates how many times a participant completes a test problem perfectly while utilizing the least number of moves. A high score in this category reflects strong planning skills.

c) **Intra-Extra Dimensional Set Shift (IED)**: The IED task is a modification of the Wisconsin card-sorting test designed to evaluate attentional set shifting and cognitive flexibility (Owen et al., 1991). Participants are required to generate correct responses based on feedback provided automatically by the computer. The task consists of nine stages, starting with simple discrimination between two color-filled shapes displayed on the screen and culminating in a shift of attention to a new exemplar of a previously irrelevant perceptual dimension (extra-dimensional shift: EDS). To progress to the next stage, a participant must achieve six consecutive correct responses at each level. The test concludes if a participant fails to meet this criterion after 50 trials at a given stage. Two outcome measures are recorded: stages completed, which indicates the total number of stages successfully navigated by the participant, and EDS errors, which reflects the number of mistakes made during the EDS stage. Low scores on stages completed and high scores on EDS errors indicate poor attentional set shifting and cognitive flexibility.

d) **Stop Signal Task (SST):** The SST subtest is a classic signal response inhibition test (Curley et al., 2018). The participants press the relevant button on the press pad as quickly as possible, depending on the direction to which the arrow points on the screen. However, if an auditory signal is present at a variable delay after the arrow is displayed, the participants withhold their responses and do not press the button (stop trials). This task comprises go trials (75%) and stop trials (25%) presented over five blocks of 64 trials each. The outcome measures are direction errors and proportion of successful stops. The former counts the number of times a participant pressed the wrong button for the direction of the arrow on the screen in the stop and go trials, and the latter refers to the number of times a participant stops successfully, divided by the total number of stop signals using all the assessed trials.

A high score on direction errors and a low proportion of successful stops reflects poor **impulse control.**

e) **Cambridge Gambling Task (CGT**): The CGT was created to evaluate decision-making and risk-taking in contexts outside of a learning environment. Unlike commonly used assessments such as the Balloon Analog Risk Taking Task (BART) and the Iowa Gambling Task (IGT), which involve ambiguity, the CGT requires participants to make bets under conditions of known risk (e.g., Bechara, Damasio, Tranel & Damasio, 2005; Lejuez et al., 2002). This test minimizes the demands on learning, executive functioning, and working memory, which can complicate the interpretation of results. Furthermore, it distinguishes between decision-making, where participants choose what to bet on, and risk-taking, where they determine how much to wager on that choice. In the CGT, a yellow token is hidden in one of ten boxes that appear on a computer screen. Some of the boxes are red, others are blue, and the ratio between red and blue boxes can range from one red (nine blue) to nine red (one blue) boxes, with each (red, blue)-pair having an equal chance of occurring. The CGT proceeds in two stages, where the participant: (1) predicts the color of the box hiding the token, and then (2) bets a proportion of their accumulated points based on the certainty of their decision. The CGT has a number of behavioural measures, including: (1) quality of decision-making, (2) impulsivity/delay aversion, (3) risk-taking, (4) deliberation time, (5) risk adjustment, and (6) overall proportion bet.

f) **The Multitasking Test (MTT):** MTT is a test of executive function which provides a measure of the ability to use multiple sources of potentially conflicting information to guide behaviour. On each trial, an arrow appears on the right or on the left hand side of the screen, and the subject is asked to make a right or left response. During training stages, subjects learn to either respond according to the direction of the arrow, or according to the side of

the screen on which it appears. During the assessed stage, each trial is preceded by a cue indicating whether the subject should respond according to direction or side. In some sections of the test the same rule is applied consistently across trials, whereas in the final phase the rules are intermixed in a randomised manner. For some trials, the arrow's direction and side are incongruent.

g) **Spatial Working Memory (SWM):** This self-ordered task evaluates spatial working memory and heuristic strategies (Owen et al., 1990). The procedure requires participants to locate a blue token concealed within a series of boxes and place it into an empty column on the right side of the screen. Importantly, no blue token will be found in any box where it has been previously located. This task becomes increasingly difficult as the number of boxes increase from three to eight. This study presents two key outcome measures: between errors in n boxes (the number of times a participant revisited a box where a blue token had already been found on the four-, six-, and eight-box problems) and strategy (the number of times a participant began a new search with a different box on the six- and eight-box problems). A high score on between errors reflects poor spatial working memory, and a high score on strategy reflects poor use of the strategy.

9. Digit-symbol substitution test (DSST): It is a widely utilized neuropsychological assessment known for its clinical sensitivity in individuals with brain damage, dementia, schizophrenia, depression, and age-related cognitive decline. Its brevity, clinical relevance, and sensitivity to cognitive dysfunction across various essential domains make the DSST particularly suitable for remote administration (e.g., via smartphone). This paper-and-pencil cognitive test is presented on a single sheet and requires participants to match symbols to numbers based on a key located at the top of the page. Participants then copy the symbols into designated spaces beneath a row of

numbers. The score is determined by the number of correct symbols completed within the allotted time, typically ranging from 90 to 120 seconds.

10. The Revised Child Anxiety and Depression Scale (RCADS): It is a 47-item self-report questionnaire designed for youth, featuring subscales that assess separation anxiety disorder, social phobia, generalized anxiety disorder, panic disorder, obsessive-compulsive disorder, and low mood (major depressive disorder). Additionally, it provides a Total Anxiety Scale, which is the sum of the five anxiety subscales, as well as a Total Internalizing Scale, which encompasses all six subscales. The RCADS is appropriate for children and adolescents aged 8 to 18 years. Each item is rated on a scale from 0 to 3, where 0 indicates "Never," 1 represents "Sometimes," 2 stands for "Often," and 3 signifies "Always." To obtain scores for each subscale, the numerical values for each item are summed. Raw scores are then converted into T-scores, with scores of 65 or higher indicating a borderline clinical threshold, and T-scores of 70 or higher reflecting scores above the clinical threshold.

11. The World Health Organization Quality of Life Scale - Brief version (WHOQOL-BREF): It is a 26-item self-report questionnaire that utilizes a Likert-type scale to assess quality of life. The WHOQOL-BREF includes 24 items that evaluate four domains of quality of life: physical health, psychological health, social relationships, and environmental conditions, along with 2 global items that assess overall quality of life and general health. Higher scores indicate a better quality of life (The WHOQOL Group, 1998). Findings from the international field trial of the WHOQOL-BREF demonstrate that it possesses good to excellent psychometric properties, including internal consistency reliability, discriminant validity, and construct validity, thereby providing a cross-culturally valid assessment of quality of life (Skevington et al., 2004).

INTERVENTION STRUCTURE

Baseline assessment = 2 and Immediate Post Assessment Session=2 session.

Total number of sessions: 13

Duration of each session: 90-120 minutes.

Components addressed: The session components have been derived from the Brain Wave-R program, developed by Malia et al. (2002), is designed to support the cognitive rehabilitation of individuals with brain injuries. This program features a comprehensive range of exercises, primarily paper-and-pencil based, organized into five modules that target specific cognitive deficits: Attention, Visual Processing, Information Processing, Memory, and Executive Functions. Each module is structured to span four weeks. The module of Executive Functions has been selected for the purpose of the study. Behaviour Modification Intervention was anchored from PIPATIC program by Griffiths & Rodriguez (2017) based on cognitive-behavioural therapy (CBT) principles and aims to provide a structured approach to help individuals, particularly adolescents, manage and reduce their problematic gaming behaviours. It combines psychoeducation, individual therapy, parental involvement, and cognitive-behavioural strategies to promote healthier gaming habits. Its goal is to reduce the negative impact of gaming while encouraging alternative activities and coping mechanisms.

PHASE	SESSION NO.	TECHNIQUE	CONTENT/DESCRIPTION OF THE SESSION
I	1	Orientation, rapport establishment, Pre-intervention assessment	Establishing rapport and explaining the process of therapy. Administering the pre-intervention assessment tools on the patients to establish baseline measures of study variables.
I	2	Psychoeducation Assessing Psychological Effects of IGD; Irrational and Rational Thoughts; Motivational Interviewing and Maintaining Mental Hygiene.	• Educating the patient about healthy and unhealthy gaming behaviour and its relation to different mental health problems. • To enhance the motivation of the participants with use of open-ended questions, affirmations, summarising, reflective listening, developing discrepancy, eliciting change talk, and rolling with resistance. • Let them assess the effects of online gaming on their thoughts. Explain on the importance of rational, optimistic thoughts in maintaining mental hygiene. • Let the participants talk about their good thoughts.
I	1	Emotional and behavioural effects of IGD	• Enlighten the participants on the emotional effects and identify their learned attitudes of IGD. • Let them describe their experience of having

		Activity Scheduling	positive emotion. Elaborate on the influence of positive emotion to one's life. • Expound on the effects of IGD on one's behaviour. Let them list the times during the day when they play online games. • Let them write the ways to lessen their online gaming Plan a weekly schedule to manage their time and their activities that can help in regulating their virtual gaming along with the tasks given by the therapist. Let them choose activities in exchange of online gaming.
II	1	Self-organizing: Improve self-organization skills.	• **Writing lists or steps** The participant has to write down each problem clearly, should be numbered in order cross each step off when it is accomplished (everyday). • **Self-questioning** Ask questions themselves when dealing with problem. Example: what is it I want to accomplish? • **Speaking out loud** Speak out thoughts, three stages speak loud, when it becomes a habit whisper, then talk silently. • **Report writing** Description of how you solved the problem. • **Questions** Write down the effectiveness of questioning method (it will be exercised at the beginning of each test).

		Skipping Meals and the Right Eating Habits	Tackle about the effects of skipping meals while online games. Talk about the food and its importance.
II	1	Planning Missing sleep and Importance of sleep (sleep hygiene)	• **Moves on a maze puzzle** There are 8 puzzles that the person is supposed to complete. • **Task breakdown** The therapist will give a problem that the person has to break down before solving. • **Simplifying Information** The therapist will give a passage the person has to simplify as a telegram. • **Classified advertisements.** Certain information will be given about advertisement the person is supposed to make a classified advertisement, based on certain conditions. Analyse with them the effects of missing sleep Let them plan a sleep schedule and list ways to have a good sleep.

II	1	Cognitive flexibility	Certain situations will be given to the patients; they are supposed to list the positives and negatives of the situation.
		Task organizing	Certain tasks will be given like brushing teeth, taking bath the person has to write down the steps to complete each task.
	1	Estimating time	The person is supposed to guess the time given
		Managing time	Make a plan for the tasks given by managing the time.
II	1	Gathering information	Searching - searching for information given in a paragraph.
		Planning	The person will be instructed to plan the very next day in his life, then following the same.
		Self-awareness and goal setting	By making them aware about what is self-awareness and the setting the goals they aspire to achieve.
	1	Description of self	There will be certain questions relating to self, that the person is supposed to answer.
		Constructing a personal profile	Based on all the information person has gained from this program, he/she has to write a short report of it.
		Psychosocial effect of IGD and Mending	Emphasize on the psychosocial effects of IGD on one's relationship. Illuminate on the value of mending

		relationships	relationships as essential aspect towards their recovery from IGD. Let them role play social ways that can improve their relationships.
II	1	Goal setting personal goals/	The person is instructed to set realistic goals for the next 7 days.
		Alternative goals	Based on the personal goals, make a list of alternative goals for next 7 days or a period of time.
		Self-planning. Initiation, and regulation	Therapist will introduce all this terms and make the person understand what this is all about with the help of certain questions.
	1	Self-awareness and The evaluation	Person is supposed to make a report about how much they achieved.
III	1	Youth Productive Lifestyle, Closure and Evaluation. Relapse Prevention	Expound on the worth of one's time and youth productive lifestyle. Remind them on self-management to prevent the recurrence of GD. Relapse prevention technique will be discussed. Let them write and share their plan for the future Explain the session closure and let them evaluate the therapy.
	1	Termination and Post-intervention.	Administering the post-intervention assessment tools.

PROCEDURE:

The study will be initiated after obtaining permission from the Institute Ethics Committee and registration with CTRI. The adolescents with problematic internet gaming would be recruited for the study after they fulfil the eligibility criteria and written informed assent and consent is obtained from them and parent(s) respectively. After obtaining the information on the sociodemographic data sheet and the clinical information sheet, the adolescents would be screened for neurodevelopmental disorders (ESSENCE-Q) and substance use disorders (CRAFFT) in addition to obtaining a detailed history and examination. The problematic internet and gaming use would be identified and severity coded (IAT, IGD-20). Additionally, the adolescents will be also be evaluated for the presence of co-morbid depressive and anxiety symptoms (RCADS-Parent Version). The executive functions (CANTAB), Digit substitution test and quality of life (WHOQOL-BREF) would also be assessed. After the completion of the above baseline assessments, the adolescents would be randomised into two groups using a computer generated simple randomisation sequence.

Group 1: Adolescents who will receive brief neurocognitive intervention

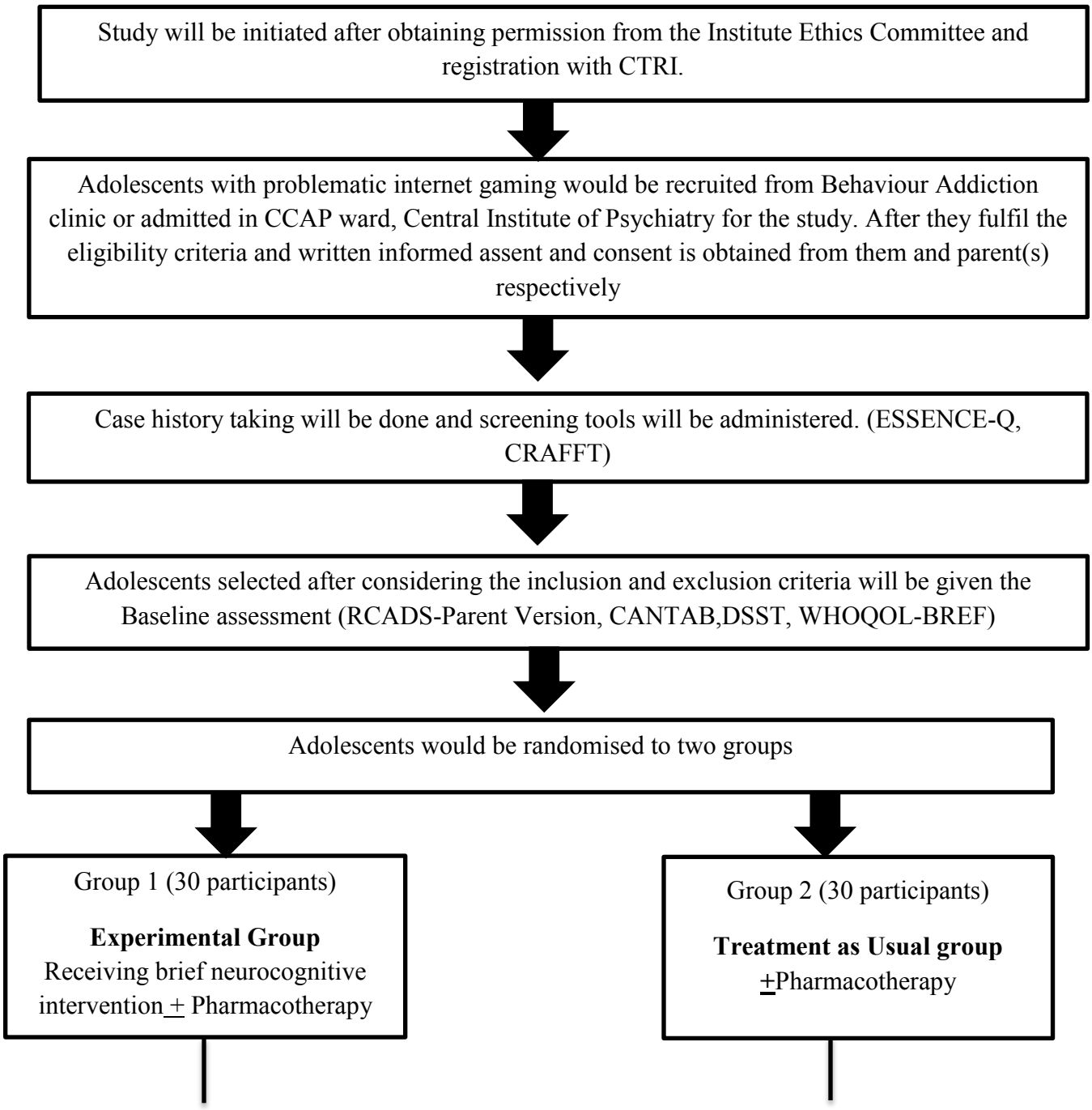
The adolescents from group 1 will undergo the same set of evaluations at the end of 7 weeks of intervention.

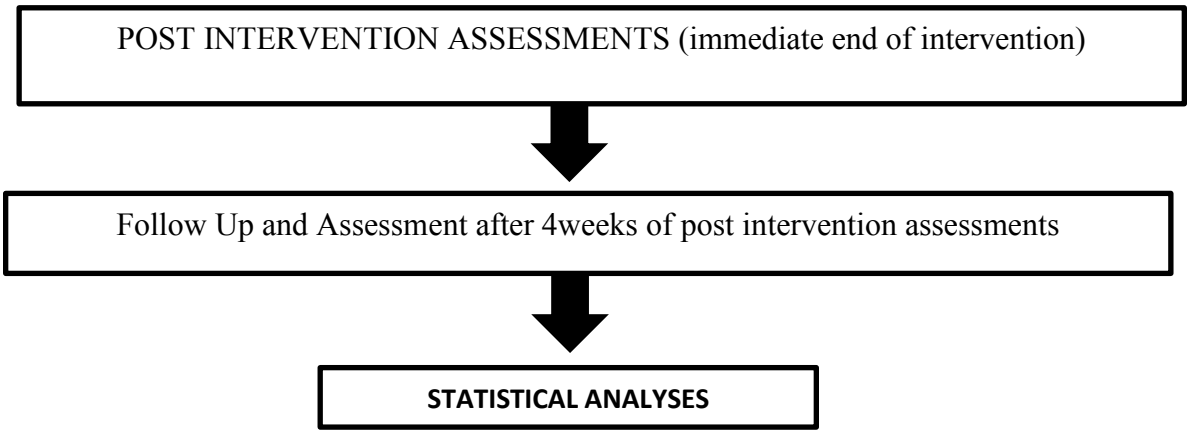
Group 2: Adolescents who will be Treatment as usual group.

The adolescents from group 2 will also undergo the same set of evaluations at the end of 7 weeks of baseline assessments. Due to ethical considerations, adolescents in the treatment as usual group will also receive the intervention after completion of 7 weeks of study. Their intervention will only

start to receive the intervention after the completion of seven weeks from the baseline assessments after completion of 7 weeks is made available.

Both the groups will continue to receive the pharmacotherapy in stable doses as advised by the treating team till the time the adolescents continue to be part of the intervention.


Study will be initiated after obtaining permission from the Institute Ethics Committee and registration with CTRI.
Adolescents with problematic internet gaming would be recruited from Behaviour Addiction clinic or admitted in CCAP ward, Central Institute of Psychiatry for the study. After they fulfil the eligibility criteria and written informed assent and consent is obtained from them and parent(s) respectively
Case history taking will be done and screening tools will be administered. (ESSENCE-Q, CRAFFT)
Adolescents selected after considering the inclusion and exclusion criteria will be given the Baseline assessment (RCADS-Parent Version, CANTAB,DSST, WHOQOL-BREF)
Adolescents would be randomised to two groups
Group 1 (30 participants)
Experimental Group
Receiving brief neurocognitive intervention + Pharmacotherapy
Group 2 (30 participants)
Treatment as Usual group
+Pharmacotherapy


POST INTERVENTION ASSESSMENTS (immediate end of intervention)
Follow Up and Assessment after 4weeks of post intervention assessments
STATISTICAL ANALYSES

ANALYSIS OF DATA:

The statistical procedure will be completed by using Statistical Package for Social Sciences (SPSS) version 25.0. The demographic and other variables will be analysed using descriptive statistics. Repeated measures will be used to assess the longitudinal and cross-sectional differences between the groups. The analysis will aid in measuring the changes in the variables post-intervention following the therapy as compared to the pre-intervention assessment. Appropriate correlations shall be made to assess the relationship between the variables. Further statistical analyses will be done accordingly; this is an interim plan.

PHD TIMELINE

TASKS	DEC (23)	JAN (24)	FEB	MAR	APR	MAY	JUNE	JUL	AUG	SEPT	OCT	NOV	DEC	JAN (25)	FEB	MAR	APR (25)
DATA COLLECTION																	
DATA ANALYSIS																	
THESIS WRITING																	
THESIS SUBMISSION																	

`SIGNIFIANCE OF STUDY:

Internet Gaming Disorder (IGD) is a growing concern among adolescents due to its impact on executive functioning and psychosocial problems. Adolescents often experience lower well-being, increased psychiatric symptoms, and reduced life satisfaction. Neuropsychological intervention can help identify cognitive deficits driving excessive gaming behaviour and help develop healthier coping mechanisms. The intervention targets cognitive functions, addressing neural changes linked to gaming addiction and enhancing neuroplasticity. Behaviour modification therapy and cognitive training exercises can help reduce online gaming frequency, intensity, and duration, while promoting non-Internet-related activities to reduce pathological use.

RELEVANCE TO THE PRESENT-DAY PROBLEM AND NEED OF THE SOCIETY

The research underscores a focused approach on modifying behaviour to foster positive changes, ultimately striving to establish a healthier balance in adolescents' engagement with virtual gaming. The intervention will also address the functional difficulties experienced by the patient related to their Internet use, both in personal and professional contexts, while aiming for significant long-term improvements. Furthermore, we suggest that incorporating neurocognitive training aimed at Internet-specific control processes may enhance the potential for favourable outcomes in cases of Internet-use disorders.

CONTRIBUTING TO EXISTING KNOWLEDGE

Current interventions for Internet Gaming Disorder (IGD) tend to focus on limited factors or pathways contributing to its onset, primarily addressing cognitive distortions, contingency

management, and homework assignments. However, the sustainability of therapeutic gains in reducing the time spent on Internet gaming remains uncertain. These factors underscore the necessity for the development of intervention programs that adopt an integrative approach to effectively address Internet Gaming Disorder (IGD) and its associated neuropsychological deficits. There is lack of therapeutic approaches that have specifically focused on the executive functioning mechanisms from neuropsychological point of view. Assessing individuals' cognitive functions is a crucial consideration, including attentional biases, implicit and explicit cognitions, executive functions and inhibitory control capacities, in the context of clinical treatment. Drawing inspiration from the neuropsychology principles (brain-behavior relations) there is a need to target the underlying cognitive and neural mechanisms of gaming addiction.

FUTURE WORK

Neurocognitive interventions along with behaviour modification can help mitigate the severity of Internet and gaming addiction while striving for three main objectives: reducing usage hours; increasing functioning in key areas of life, and reducing exposure to content and problematic online operations.

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INFROMED CONSENT AND ASSENT FORM

APPLICABILITY OF A BRIEF NEUROCOGNITIVE INTERVENTION FOR ADOLESCENTS WITH INTERNET GAMING DISORDER: THE IGNITE-A TRIAL

Investigators' Details:

1. Ms. Kriti Kanwar, M.Phil
2. Dr. Masroor Jahan, M.Phil, PhD
3. Dr. Varun Mehta, M.D.

Participant Details:

1. Name:
2. Age/Date of Birth:
3. Name of the Informant/Guardian/Caregiver:
4. Address:

Probable Finding Agency:

Guardian/Caregiver CONSENT FORM

Part I: Information Sheet for Patient and/or Guardians/Caregivers

1. **Purpose of Study**: You are requested to participate in the above mentioned study. You can read and understand this information before consenting for the study and can read this information even after that all the times. Ensure that you understand the information provided to you.

   The present study focuses over the application of a brief neurocognitive intervention as a treatment for adolescents with internet gaming disorder having deficits in executive functioning.
2. **Process of Study:** In this study, data would be collected by proper and detailed evaluation of patients attending OPD and/or admitted to the hospital as per the inclusion and exclusion criteria mentioned and further statistical analysis would be performed to test the hypotheses.
3. **Risk from the Study :** Nil

4. **Benefits from the Study:** In this study, we would assess the applicability of brief neurocognitive intervention in treating the adolescents with internet gaming disorder having deficits in executive functioning which would help develop and execute appropriate pharmacological and better management of these patients.
5. **Complications:** Nil
6. **Compensation:** Nil
7. **Confidentiality**: Your participation in this study would be kept confidential. No data/part of data would be published with your name in it. By signing this consent from, you authorize investigative agency and Institute Ethics Committee to share the records related to you.
8. **Rights of the Participants**: For receiving treatment at CIP, Ranchi in future, you and your family has the right to withdraw your consent from the study during any part of the study without any reason.
9. **Options for Participation in the Study**: You can continue with the usual treatment what you have been receiving from CIP, Ranchi.

You can ask for more/further information during and/or after the completion of the study.

Part 2: Patient ASSENT FORM

I have read and have been explained the information contained in this form. I was given chance to ask and put forth questions related to the study. I have been made satisfied completely.

I hereby give my consent for participation in the Study.

Name of the Patient:

Signature/Left Thumb Impression of Patient/Caregiver:

Date:

Relationship with the patient:

Testimony of the Investigator:

I, Kriti Kanwar, Investigator have explained to the patient/caregiver in the language in which they are conversant. I have explained the procedure, benefits and harm of the study to them.

Signature of the Investigator:	Signature of the Witness:
Name of the Investigator:	Name of the Witness
Date:	Date:

अपेंडिक्स ए
भारत सरकार
केन्द्रीय मनाचिचकत्सा संस्थान
रांची– 834006
सूचित सहमचत पत्र

इंटरनेट गेमिंग विकार वाले
एडोलिसेंस के लिए एक संक्षिप्त तंत्रिका-संज्ञानात्मक हस्तक्षेप की प्रयोज्यता: इग्नाइट-ए परीक्षण

इन्वेस्टिगेटर्स' डिटेल्स:
1. मिस. कृति कँवर, म.फील
2. डॉ. मसरूर जहाँ, म.फील, पीएचडी
3. डॉ. वरुण मेहता, म.डी.

प्रचतभागी:
1. नाम:
2. उम्र/जन्म चतचथ:
3. अचभभावक का नाम:
4. पता:

संभाचवत चनचि एजेंसी:

अभिभावक/देखभालकर्ता सहमति प्रपत्र

भाग I: रोगी और/या अभिभावकों/देखभाल करने वालों के लिए सूचना पत्रक

1. **अध्ययन का उद्देश्य**: आपसे उपरोक्त अध्ययन में भाग लेने का अनुरोध किया जाता है। आप इस जानकारी को अध्ययन के लिए सहमति देने से पहले पढ़ और समझ सकते हैं और उसके बाद भी हर समय इस जानकारी को पढ़ सकते हैं। सुनिश्चित करें कि आपको दी गई जानकारी समझ में आ गई है।

2. **अध्ययन की प्रक्रिया**: इस अध्ययन में, उल्लिखित समावेशन और बहिष्करण मानदंडों के अनुसार ओपीडी में भाग लेने वाले और/या अस्पताल में भर्ती मरीजों के उचित और विस्तृत मूल्यांकन द्वारा डेटा एकत्र किया जाएगा और परिकल्पनाओं का परीक्षण करने के लिए आगे सांख्यिकीय विश्लेषण किया जाएगा।

3. **अध्ययन से जोखिम**: शून्य

4. **अध्ययन से लाभ:** इस अध्ययन में, हम कार्यकारी कामकाज में कमी वाले इंटरनेट गेमिंग विकार वाले किशोरों के इलाज में संक्षिप्त तंत्रिका-संज्ञानात्मक हस्तक्षेप की प्रयोज्यता का आकलन करेंगे जो इन रोगियों के उचित औषधीय और बेहतर प्रबंधन को विकसित करने और निष्पादित करने में मदद करेगा।

5**. जटिलताएँ:** शून्य

6. **मुआवज़ा**: शून्य

7. **गोपनीयता:** इस अध्ययन में आपकी भागीदारी गोपनीय रखी जाएगी। आपके नाम के साथ कोई डेटा/डेटा का हिस्सा प्रकाशित नहीं किया जाएगा। इस सहमति पर हस्ताक्षर करके आप जांच एजेंसी और इंस्टीट्यूट एथिक्स कमेटी को आपसे जुड़े रिकॉर्ड साझा करने के लिए अधिकृत करते हैं।

8. **प्रतिभागियों के अधिकार**: भविष्य में सीआईपी, रांची में उपचार प्राप्त करने के लिए, आपको और आपके परिवार को अध्ययन के किसी भी भाग के दौरान बिना किसी कारण के अध्ययन से अपनी सहमति वापस लेने का अधिकार है।

9. **अध्ययन में भागीदारी के लिए विकल्प**: आप सीआईपी, रांची से जो सामान्य उपचार प्राप्त कर रहे हैं उसे जारी रख सकते हैं।

आप अध्ययन के दौरान और/या उसके पूरा होने के बाद अधिक/अतिरिक्त जानकारी मांग सकते हैं।

भाग 2: रोगी सहमति प्रपत्र

मैंने इस फॉर्म में निहित जानकारी को पढ़ लिया है और मुझे समझा दिया गया है। मुझे अध्ययन से संबंधित प्रश्न पूछने और सामने रखने का मौका दिया गया। मुझे पूरी तरह से संतुष्ट कर दिया गया है.'

मैं इस अध्ययन में भाग लेने के लिए अपनी सहमति देता हूं।

मरीज का नाम:

रोगी/देखभालकर्ता के हस्ताक्षर/बाएं अंगूठे का निशान:

तारीख:

रोगी के साथ संबंध:

अन्वेषक की गवाही:

मैं, कृति कंवर, अन्वेषक ने रोगी/देखभालकर्ता को उसी भाषा में समझाया है जिसमें वे बातचीत करते हैं। मैंने उन्हें अध्ययन की प्रक्रिया, लाभ और हानि के बारे में बताया है।

जांचकर्ता के हस्ताक्षर:	गवाह के हस्ताक्षर:
अन्वेषक का नाम:	गवाह का नाम
दिनांक:	दिनांक:

APPENDIX B

GOVERNMENT OF INDIA
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APPLICABILITY OF A BRIEF NEUROCOGNITIVE INTERVENTION FOR ADOLESCENTS WITH INTERNET GAMING DISORDER: THE IGNITE-A TRIAL

SOCIO-DEMOGRAPHIC SHEET

Serial No.: Date of data collection:

1. Name:
2. Age (in years):
3. Date of Birth:
4. Place of Birth:
5. Gender: 1. Male 2. Female
6. Religion: 1. Hindu 2.Other (Muslim, Christian) _____
7. Completed Education years:
8. Family Monthly Income (Rupees):
9. Residence: 1. Rural 2. Semi-Urban 3. Urban
10. Duration of illness:
11. Weekly Gameplay: Duration: Frequency: Time spent in gaming:
12. Device preference: Game Genre Preference:
13. Existence of offline friendships: Yes/ No
14. Past History:
    a. Medical illness 1. Present _____ 2. Absent
    b. Psychiatric illness 1. Present _____ 2. Absent
15. Family history:
16. Medical illness 1. Present _____2. Absent
17. Psychiatric illness 1. Present _____2. Absent

PLAYER PROFILE SHEET

Date:

Name:

Age of Recognition of Problems Related To Gaming Behaviour:

On which device you play the game (more than 1 option can be selected)

1. Mobile Phones
2. Personal Computers
3. Laptops
4. Gaming Consoles like Play Station/Xbox
5. Any Others (Mentions):

Hours of gameplay per day on weekdays:

Hours of gameplay per day on weekends:

Mention the games you play (more than 1 game can be mentioned):

APPENDIX C

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APPLICABILITY OF A BRIEF NEUROCOGNITIVE INTERVENTION FOR ADOLESCENTS WITH INTERNET GAMING DISORDER: THE IGNITE-A TRIAL

INTERNET ADDICTION TEST

Name:
Male/ Female
Age: Years Online: Do you use the Internet for work? Yes No

This questionnaire consists of 20 statements. After reading each statement carefully, based upon the 5-point Likert scale, please select the response (0, 1, 2, 3, 4 or 5) which best describes you. If two choices seem to apply equally well, circle the choice that best represents how you are most of the time during the past month. Be sure to read all the statements carefully before making your choice. The statements refer to offline situations or actions unless otherwise specified.
0 = Not Applicable 1 = Rarely 2 = Occasionally 3 = Frequently 4 = Often 5 = Always

1. How often do you find that you stayonline longer than you intended?
2. How often do you neglect household chores to spend more time online?
3. How often do you prefer the excitement of the Internet to intimacy with your partner?
4. How often do you form new relationships with fellow online users?
5. How often do others in your life complain to you about the amount of time you spend online?
6. How often do your grades or school work suffer because of the amount of time you spend online?
7. How often do you check your email before something else that you need to do?
8. How often does your job performance or productivity suffer because of the Internet?
9. How often do you become defensive or secretive when anyone asks you what you do online?
10. How often do you block out disturbing thoughts about your life with soothing thoughts of the Internet?
11. How often do you find yourself anticipating when you will go online again?
12. How often do you fear that life without the Internet would be boring, empty, and joyless?
13. How often do you snap, yell, or act annoyed if someone bothers you while you are online?
14. How often do you lose sleep due to being online?
15. How often do you feel preoccupied with the Internet when off-line, or fantasize about being online?
16. How often do you find yourself saying "just a few more minutes" when online?
17. How often do you try to cut down the amount of time you spend online and fail?
18. How often do you try to hide how long you've been online?
19. How often do you choose to spend more time online over going out with others?
20. How often do you feel depressed, moody, or nervous when you are off-line, which goes away once you are back online?

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APPLICABILITY OF A BRIEF NEUROCOGNITIVE INTERVENTION FOR ADOLESCENTS WITH INTERNET GAMING DISORDER: THE IGNITE-A TRIAL

THE INTERNET GAMING DISORDER TEST (IGD-20 TEST)

Instructions: These questions relate to your gaming activity during the past year (i.e., 12 months). By gaming activity we mean any gaming-related activity that was played on either a computer/laptop, gaming console and/or any other kind of device online and/or offline.

	Strongly Disagree	Disagree	Neither agree of Disagree	Agree	Strongly Agree
I often lose sleep because of long gaming sessions.	5	4	3	2	1
I never play games in order to feel better.	5	4	3	2	1
I have significantly increased the amount of time I play games over last year.	5	4	3	2	1
When I am not gaming I feel more irritable.	5	4	3	2	1
I have lost interest in other hobbies because of my gaming.	5	4	3	2	1
I would like to cut down my gaming time but it's difficult to do.	5	4	3	2	1
I usually think about my next gaming session when I am not playing.	5	4	3	2	1
I play games to help me cope with any bad feelings I might have.	5	4	3	2	1
I need to spend increasing amounts of time engaged in playing games.	5	4	3	2	1
I feel sad if I am not able to play games	5	4	3	2	1
I have lied to my family members because the amount of gaming I do.	5	4	3	2	1
I do not think I could stop gaming.	5	4	3	2	1
I think gaming has become the most time consuming activity in my life.	5	4	3	2	1
I play games to forget about whatever's bothering me.	5	4	3	2	1
I often think that a whole day is not enough to do everything I need to do in-game.	5	4	3	2	1
I tend to get anxious if I can't play games for any reason.	5	4	3	2	1
I think my gaming has jeopardized the relationship with my partner.	5	4	3	2	1
I often try to play games less but find I cannot.	5	4	3	2	1
I know my main daily activity (i.e., occupation, education, homemaker, etc.) has not been negatively affected by my gaming.	5	4	3	2	1
I believe my gaming is negatively impacting on important areas of my life.	5	4	3	2	1

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APPLICABILITY OF A BRIEF NEUROCOGNITIVE INTERVENTION FOR ADOLESCENTS WITH INTERNET GAMING DISORDER: THE IGNITE-A TRIAL

SIDEDNESS PREFRENCE SCHEDULE

Instruction: Indicate your preference for each activity in the questionnaire on a five-point rating scale

निर्देश निम्नलिखित वाक्यों में कुछ क्रियाएँ दी गई हैं। प्रत्येक को करने में आप अपने बायें एवं दायें हाथ का कितना प्रयोग करते है ? कोष्ठक में दिए गये शब्दों में से उपयुक्त शब्द चुनकर रिक्त स्थान में भरें जो आपके लिए लागु होता है ।

कभी नहीं.	लगभग नहीं.	कभी – कभी	प्राय	हमेशा
1	2	3	4	5

1	मै लिखने के लिए अपने बायें हाथ का प्रयोग	करना पसन्द करता
	हूँ एवं दायें हाथ का प्रयोग	करना पसन्द करता हूँ।
2	मै खाना खाने हेतु अपने दायें हाथ का प्रयोग	करना पसन्द
	करता हूँ एवं बायें हाथ का प्रयोग	करना पसन्द करता हूँ।
3.	मै पानी भरी बाल्टी उठाने हेतु अपने बायें हाथ का प्रयोग	करना पसन्द
	करता हूँ एवं दायें हाथ का प्रयोग	करना पसन्द करता हूँ।
4	मै ताला खोलते समय चाभी पकड़ने हेतु अपने बायें हाथ का प्रयोग	
	करना पसन्द करता हूँ एवं दायें हाथ का प्रयोग	करना पसन्द
	करता हूँ/करती हूँ।	
5	मै कँघी पकड़ने हेतु अपने बायें हाथ का प्रयोग	करना पसन्द
	करता हूँ एवं दायें हाथ का प्रयोग	करना पसन्द करता हूँ।
6	मै चित्रकारी करते समय रंग भरने हेतु ब्रश पकड़ने मे अपने बायें हाथ का प्रयोग	
	करना पसन्द करता हूँ एवं बायें हाथ का प्रयोग	करना पसन्द करता हूँ।
7	मै बालों मे कंघी करते समय कंघी पकड़ने हेतु अपने दायें हाथ का प्रयोग	
	करना पसन्द करता हूँ एवं बायें हाथ का प्रयोग	करना पसन्द करता हूँ।
8	मै झाड़ू पकड़ने के लिए अपने बायें हाथ का प्रयोग	करना पसन्द
	करता हूँ एवं दायें हाथ का प्रयोग	करना पसन्द करता हूँ।
9	मै पानी का नल खोलने मे अपने बायें हाथ का प्रयोग	करना पसन्द
	करता हूँ एवं दायें हाथ का प्रयोग	करना पसन्द करता हूँ।
10	मै बिजली का स्विच दबाने मे अपने दायें हाथ का प्रयोग	करना पसन्द
	करता हूँ एवं बायें हाथ का प्रयोग	करना पसन्द करता हूँ।
11	मै माचिस जलाते समय तीली पकड़ने हेतु अपने बायें हाथ का प्रयोग	
	करना पसन्द करता हूँ एवं दायें हाथ का प्रयोग	करना पसन्द करता हूँ।
12	मै ताश का पत्ता बांटने हेतु अपने दायें हाथ का प्रयोग	करना पसन्द
	करता हूँ एवं बायें हाथ का प्रयोग	करना पसन्द करता हूँ।
13.	मै सब्जी काटने वक्त चाकू पकड़ने हेतु बायें हाथ का प्रयोग	करना पसन्द
	करता हूँ एवं दायें हाथ का प्रयोग	करना पसन्द करता हूँ।
14	मै बैडमिन्टन खेलते वक्त रैकेट पकड़ने हेतु अपने दायें हाथ का प्रयोग	
	करना पसन्द करता हूँ एवं दायें हाथ का प्रयोग	करना पसन्द करता हूँ।
15	मै बोतल खोलते समय ढक्कन घुमाने हेतु अपने बायें हाथ का प्रयोग	
	करना पसन्द करता हूँ एवं दायें हाथ का प्रयोग	करना पसन्द करता हूँ।

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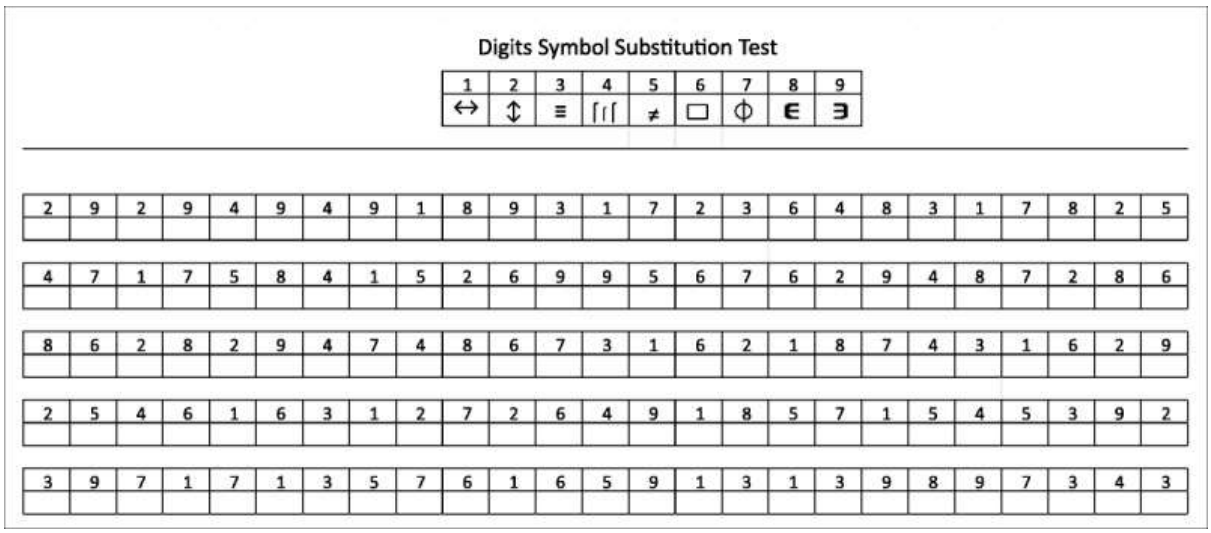
Instruction: It is a paper-and-pencil. You are required to match symbols to numbers according to a key located on the top of the page. Copy the symbol into spaces below a row of numbers.



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ESSENCE Q QUESTIONNAIRE

Instruction: Please take a few minutes to read and check the following items.

Y=Yes M/AL : Maybe/A Little N-No

Have you (or anybody else, who? been concerned for more than a few months regarding a child's

1. General development

2. Motor development/milestones

3. Sensory reaction (eg, touch, sound, light, smell, taste, heat, cold, pain)

4. Communication/language/babble

5. Activity (overactivity/passivity) or impulsivity

6 Attention/concentration/listening

7. Social interaction/interest in other children

8 Behaviour (eg, repetitive, routine insistence)

9. Mood (depressed, elated/manic, extreme irritability, crying spells)

10. Sleep

11. Feeding

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World Health Organization Quality of Life Scale - Brief version (WHOQOL-BREF

The following questions ask about **how much** you have experienced certain things in the last two weeks.

	Never	Seldom	Quite Often	Very Often	Always
How would you rate your quality of life?	1	2	3	4	5
How satisfied are you with your health?	1	2	3	4	5
To what extent do you feel that physical pain prevents you from doing what you need to do?	1	2	3	4	5
How much do you need any medical treatment to function in your daily life?	1	2	3	4	5
How much do you enjoy life?	1	2	3	4	5
To what extent do you feel your life to be meaningful?	1	2	3	4	5
How well are you able to concentrate?	1	2	3	4	5
How safe do you feel in your daily life?	1	2	3	4	5
How healthy is your physical environment?	1	2	3	4	5
Do you have enough energy for everyday life?	1	2	3	4	5
Are you able to accept your bodily appearance?	1	2	3	4	5
Have you enough money to meet your needs?	1	2	3	4	5
	1	2	3	4	5

How available to you is the information that you need in your day-to-day life?					
To what extent do you have the opportunity for leisure activities?	1	2	3	4	5

The following questions ask you to say how **good** or **satisfied** you have felt about various aspects of your life over the last two weeks.

	Never	**Seldom**	**Quite Often**	**Very Often**	**Always**
How satisfied are you with your sleep?	1	2	3	4	5
How satisfied are you with your sleep?	1	2	3	4	5
How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
How satisfied are you with your capacity for work?	1	2	3	4	5
How satisfied are you with yourself?	1	2	3	4	5
How satisfied are you with your personal relationships?					
How satisfied are you with your sex life?	1	2	3	4	5
How satisfied are you with the support you get from your friends?	1	2	3	4	5
How satisfied are you with the conditions of your living place?	1	2	3	4	5
How satisfied are you with your access to health services?	1	2	3	4	5
How satisfied are you with your mode of transportation?	1	2	3	4	5
How often do you have negative feelings, such as blue mood, despair, anxiety, depression?	1	2	3	4	5

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REVISED CHILD ANXIETY AND DEPRESSION SCALE

Instruction: Please put a circle around the word that shows how often each of these things happens to your child. There are no right or wrong answers.

1	**My child worries about things**	**Never**	**Sometimes**	**Often**	**Always**
2	My child feels sad or empty	Never	Sometimes	Often	Always
3	When my child has a problem, he/she gets a funny feeling in his/her stomach	Never	Sometimes	Often	Always
4	My child worries when he/she thinks he/she has done poorly at something	Never	Sometimes	Often	Always
5	My child feels afraid of being alone at home	Never	Sometimes	Often	Always
6	Nothing is much fun for my child anymore	Never	Sometimes	Often	Always
7	My child feels scared when taking a test	Never	Sometimes	Often	Always
8	My child worries when he/she thinks someone is angry with him/her	Never	Sometimes	Often	Always
9	My child worries about being away from me	Never	Sometimes	Often	Always
10	My child is bothered by bad or silly thoughts or pictures in his/her mind	Never	Sometimes	Often	Always
11	My child has trouble sleeping	Never	Sometimes	Often	Always
12	My child worries about doing badly at school work	Never	Sometimes	Often	Always
13	My child worries that something awful will happen to someone in the family	Never	Sometimes	Often	Always
14	My child suddenly feels as if he/she can't breathe when there is no reason for this	Never	Sometimes	Often	Always
15	My child has problems with his/her appetite	Never	Sometimes	Often	Always
16	My child has to keep checking that he/she has done things right (like the switch is off, or the door is locked)	Never	Sometimes	Often	Always
17	My child feels scared to sleep on his/her own	Never	Sometimes	Often	Always
18	My child has trouble going to school in the mornings because of feeling nervous or afraid	Never	Sometimes	Often	Always

19	My child has no energy for things	Never	Sometimes	Often	Always
20	My child worries about looking foolish	Never	Sometimes	Often	Always
21	My child is tired a lot	Never	Sometimes	Often	Always
22	My child worries that bad things will happen to him/her	Never	Sometimes	Often	Always
23	My child can't seem to get bad or silly thoughts out of his/her head	Never	Sometimes	Often	Always
24	When my child has a problem, his/her heart beats really fast	Never	Sometimes	Often	Always
25	My child cannot think clearly	Never	Sometimes	Often	Always
26	My child suddenly starts to tremble or shake when there is no reason for this	Never	Sometimes	Often	Always
27	My child worries that something bad will happen to him/her	Never	Sometimes	Often	Always
28	When my child has a problem, he/she feels shaky	Never	Sometimes	Often	Always
29	My child feels worthless	Never	Sometimes	Often	Always
30	My child worries about making mistakes	Never	Sometimes	Often	Always
31	My child has to think of special thoughts (like numbers or words) to stop bad things from happening	Never	Sometimes	Often	Always
32	My child worries what other people think of him/her	Never	Sometimes	Often	Always
33	My child is afraid of being in crowded places (like shopping centers, the movies, buses, busy playgrounds)	Never	Sometimes	Often	Always
34	All of a sudden my child will feel really scared for no reason at all	Never	Sometimes	Often	Always
35	My child worries about what is going to happen	Never	Sometimes	Often	Always
36	My child suddenly becomes dizzy or faint when there is no reason for this	Never	Sometimes	Often	Always
37	My child thinks about death	Never	Sometimes	Often	Always
38	My child feels afraid if he/she have to talk in front of the class	Never	Sometimes	Often	Always
39	My child's heart suddenly starts to beat too quickly for no reason	Never	Sometimes	Often	Always
40	My child feels like he/she doesn't want to move	Never	Sometimes	Often	Always
41	My child worries that he/she will suddenly get a scared feeling when there is nothing to be afraid of	Never	Sometimes	Often	Always
42	My child has to do some things over and over again (like washing hands, cleaning, or putting things in a certain order)	Never	Sometimes	Often	Always
43	My child feels afraid that he/she will make a fool of him/herself in front of people	Never	Sometimes	Often	Always
44	My child has to do some things in just the right way to stop bad things from happening	Never	Sometimes	Often	Always
45	My child worries when in bed at night	Never	Sometimes	Often	Always
46	My child would feel scared if he/she had to stay away from home overnight	Never	Sometimes	Often	Always
47	My child feels restless	Never	Sometimes	Often	Always

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CRAFFT Screening Tool for Adolescent Substance Abuse

Instructions: The following questions concern information about your potential involvement with alcohol and other drugs during the past 12 months. Carefully read each question and decide if your answer is "YES" or "NO". Then mark in the appropriate box beside the question. Please answer every question. If you cannot decide, then choose the response that is mostly right.

Part A: During the PAST 12 MONTHS, did you:	**YES/NO**
1. Drink any alcohol (more than a few sips)? (Do not count sips of alcohol taken during family or religious events.)	
2. Smoke any marijuana or hashish?	
3. Use anything else to get high? ("anything else" includes illegal drugs, over the counter and prescription drugs, and things that you sniff or "huff")	
Part B: CRAFFT No/ Yes	
1. Have you ever ridden in a CAR driven by someone (including yourself) who was "high" or had been using alcohol or drugs?	
2. Do you ever use alcohol or drugs to RELAX, feel better about yourself, or fit in?	
3. Do you ever use alcohol or drugs while you are by yourself, or ALONE?	
4. Do you ever FORGET things you did while using alcohol or drugs?	
5. Do your FAMILY or FRIENDS ever tell you that you should cut down on your drinking or drug use?	
6. Have you ever gotten into TROUBLE while you were using alcohol or drugs?	